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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,127	06/21/2004	Mikio SAKAUE	040284	4126
23850 7590 06/13/2007 ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006				
			EXAMINER SINGH, HIRDEPAL	
			ART UNIT 2611	PAPER NUMBER
			MAIL DATE 06/13/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/710,127

Applicant(s)

SAKAUE ET AL.

Examiner

Hirdepal Singh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 6/22/2004
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This action is in response to the filing date of June 21, 2004. Claims 1-10 are pending and have been considered below.

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rouquette (US 6,975,673) in view of Souissi et al. (US 5,671,247).

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Claim 1: Rouquette discloses a spread spectrum communication system device for receiving a spread spectrum communication signal (abstract; column 2, lines 61-67) comprising;

a. an analog to digital converter i.e. A/D converting the received signal to digital data (column 4, lines 34-40; figure 1b);

b. transforming the A/D output in the fast Fourier transformer for detecting the interference signal in the spectrum of the received signal (column 7, lines 43-48; column 5, lines 63-67; figure 3);

c. a noise eliminator eliminating the frequency component of interference signal i.e. frequency of narrow band jammer is excised (column 6, lines 1-4; column 5, lines 20-24);

d. an inverse Fast Fourier transformer to transform the output of noise eliminator back to time domain (column 7, lines 55-61; figure 8);

e. Rouquette doesn't explicitly disclose an inverse spread processor for de-spreading the output of inverse Fast Fourier transformer. However, Souissi discloses a similar method and apparatus for interference suppression in spread spectrum signals, and further discloses that after interference suppression the signal is de-spread or inverse spread and then de-modulated (column 7, lines 14-32; figures 4-6). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the de-spreader in Rouquette in order to obtain the original base band signal for proper demodulation or detection;

f. Rouquette further discloses a demodulator for demodulating the signal to get the complete signal (column 5, lines 30-35).

Claim 2: Rouquette and Souissi disclose a method and device for receiving a spread spectrum communication signal as in claim 1 above, and Rouquette further discloses a spread spectrum communication receiving device as in claim 1 above, and further discloses that the noise eliminator eliminates the interference component with power greater than a predetermined value (column 6, lines 29-34).

Claim 3: Rouquette and Souissi disclose a method and device for receiving a spread spectrum communication signal as in claim 1 above, and Rouquette further discloses a spread spectrum communication receiving device as in claim 1 above, and further discloses that the noise eliminator decides whether the energy or power of the received signal is larger than a predetermined value and eliminate or excise the frequency component with energy greater than predetermined value (column 6, lines 12-45; figure 4).

Claim 4: Rouquette and Souissi disclose a method and device for receiving a spread spectrum communication signal as in claim 1 above, and Rouquette further discloses a spread spectrum communication receiving device as in claim 1 above, and further discloses that a multiplier multiplies the outputs of A/D converter and a window function

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and the resultant signal output of the multiplier is fed to fast Fourier transformer (figures 1B, 3; column 5, lines 52-65).

Claim 6: Rouquette and Souissi disclose a method and device for receiving a spread spectrum communication signal as in claim 1 above, and Rouquette further discloses a spread spectrum communication receiving device as in claim 1 above, and further discloses that the receiving device converts the received signal directly to base band in a direct conversion system or allows the signal to remain in a near base band (column 4, lines 35-39, and 60-67).

Claim 7: Rouquette and Souissi disclose a method and device for receiving a spread spectrum communication signal as in claim 1 above, and Rouquette further discloses a spread spectrum communication receiving device as in claim 1 above, and further discloses that the received signal is converted to base band before being fed to the A/D converter (column 3, lines 17-21; column 4, lines 34-40). it is inherent that there is a functional block i.e. a frequency converter or mixer for converting the received signal to base band.

Claim 8: Rouquette discloses a spread spectrum communication device having narrow band interference rejection for receiving a spread spectrum communication signal (abstract; column 2, lines 61-67) comprising;

a. an analog to digital converter A/D converting the received base band signal to digital data (column 4, lines 34-40; figure 1b);

b. fast Fourier transforming the received signal from A/D converter and detecting and eliminating single frequency and narrow band interference components from received signal spectrum in the digital circuit of the receiver (figures 1B, and 3; column 4, lines 34-42; column 7, lines 43-48);

c. signal processing of the output of fast Fourier transformer to bring it back to time domain by inverse fast Fourier transforming (figures 9-12; column 3, lines 35-44; column 7, lines 43-65), but Rouquette doesn't explicitly disclose an inverse spread processor for de-spreading the output of inverse Fast Fourier transformer. However, Souissi discloses a similar method and apparatus for interference suppression in spread spectrum signals, and further discloses that after interference suppression the signal is de-spread or inverse spread and then de-modulated (column 7, lines 14-32; figures 4-6). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the de-spreader in Rouquette in order to obtain the original base band signal for proper demodulation or detection

Claim 9: Rouquette and Souissi disclose a method and device for receiving a spread spectrum communication signal as in claim 8 above, and Rouquette further discloses a spread spectrum communication system receiving device having narrow band interference rejection for receiving a spread spectrum communication signal as in claim 8 above, and further discloses that the processing circuit may be a digital signal

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processor DSP, or an IC integrated circuit, or a micro processor (column 5, lines 8-16; column 3, lines 12-15).

Claim 10: Rouquette and Souissi disclose a method and device for receiving a spread spectrum communication signal as in claim 8 above, and Rouquette further discloses that;

a. the device comprises detecting the interference signal component after fast Fourier transforming the received signal (column 7, lines 30-50). The reference does not use the word detector for detection of interference, but it is inherent that the interference signal component detection is certainly done by a detector;

b. a noise eliminator eliminating the frequency component of interference signal i.e. frequency of narrow band jammer is excised (column 6, lines 1-4; column 5, lines 20-24).

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rouquette (US 6,975,673) in view of Souissi et al. (US 5,671,247) further in view of Rakib et al. (US 6,426,983).

Claim 5: Rouquette and Souissi disclose a method and device for receiving a spread spectrum communication signal as in claim 4 above, but neither explicitly disclose that the window function is for preventing a side lobe caused by fast Fourier transform.

However, Rakib discloses a similar method and apparatus for narrow band interference

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rejection, and further discloses that the side lobes present in the signal are minimized by filter structure (figures 3, and 5; column 8, lines 47-67; column 9, lines 1-18).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the band pass filters of Rakib as a window function to minimize or prevent the side lobes present in signal caused by fast Fourier transform in Rouquette. One would have been motivated to use the band pass filter window function for preventing or minimizing the side lobes to improve the frequency response and to make it easier to remove the interference components from the received signal.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Nago (US 5,974,101) discloses a spread spectrum communication apparatus for narrow band interference elimination.

b. Lesthievent (US 5,844,936) discloses a method and device for eliminating interference signals in spread spectrum link.

c. Shattil (US 2003/0147655) discloses a system for spread spectrum communication.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hirdepal Singh whose telephone number is 571-270-

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1688. The examiner can normally be reached on Mon-Fri (Alternate Friday Off) 8:00AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ghayour Mohammed can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HS
May 30, 2007

Ghayour Mohammed
SPE 2611


MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER